

Cropland Idling

Issue No. 6 - DRAFT Weed Control on Idled Rice Lands

Background

Issue

Weed growth can occur on idled rice fields, which could result in consumptive use of water on idled fields. Is excessive weed growth a significant concern on idled rice acreage? If so, should weed abatement measures be required for rice idling or an adjustment be made to the allowable ETAW to account for consumptive use of weeds?

Discussion

Rice lands are normally in basin soils with high clay content, which significantly limits percolation of applied irrigation water through the soil lenses as well as access to groundwater by vegetation on idle fields. The primary source of water within idled fields is seepage from adjacent irrigation and drainage canals. Seepage from irrigation canals is difficult or impossible to control. Lining the canals subject to significant seepage is the only remedy; however, it is unlikely to be practical and may result in other potential impacts. A value of 3.3 acre-feet for evapotranspiration of applied water (ETAW) is used to estimate the consumptive use savings from idling rice acreage. Excessive seepage from adjacent irrigation and drainage canals or areas with high groundwater could result in consumption of applied water by resultant vegetation growth on idled rice fields reducing effective water savings from rice idling.

Observations from 2009 Drought Water Bank Monitoring

- Some of the idled rice fields in the program were not disked. In these cases, winter weed growth was allowed to remain on the idle fields. California Department of Water Resources (DWR) observed these conditions in the months of April and May of 2009. With few exceptions, vegetation was spotty and in the majority of such cases, winter vegetation was dry by early to mid June. In one case the idled field was visibly wet and had substantial vigorous weed growth in September.
- To mitigate for potential wildlife impacts, idled fields were required to be dispersed among planted/flooded rice fields. The Drought Water Bank (DWB) agreements specified that the districts were to ensure a depth of at least two feet of water in major canals and drains. Canals and drains all had deep water in them.
- A few of the idled fields included in the DWB were subject to locally high groundwater conditions or canal seepage, which resulted in some weed growth. The resultant vegetation was spotty and not uniform throughout the fields.

- One field accepted in the DWB had been planted to winter wheat which was allowed to mature and was harvested. Rather than disking following harvest of the wheat, the wheat stubble was left on the field. No water was applied in the 2009 irrigation season. The field remained dry throughout the transfer period.

Recommendation for 2010

Excessive weed growth does not appear to be an issue for the majority of the idled rice acreage included in the 2009 DWB Program. Most fields were both disked and essentially free of excessive vegetation or contained remnant winter vegetation that was essentially dry by mid June. There were individual fields included in the 2009 DWB subject to high groundwater conditions or canal seepage that contributed to some weed growth on the idled fields during the transfer period. Specific weed abatement measures should not be required for idled rice acreage within the Sacramento Valley, but eligible acreage should be limited to those areas not subject to excessive weed growth. Growers, participating in water transfers, are expected to control seepage onto idled lands to the best of their ability. If lands are included that are subject to high water loss from idled fields, a measurement and monitoring program should be required to estimate the consumptive use due to excessive weed growth and soil evaporation. Monitoring of very small parcels, particularly those subject to seepage or high groundwater conditions requires higher per acre-foot costs which should be captured in the administrative costs for the individual transfer.

Future Discussions for the Long-Term Program

- There is currently no 'minimum' acceptable field size. In some cases farmers have included small portions of fields (less than 1 acre - such as a narrow strip along the end of a field amounting to 0.6 acres). The inclusion of many small fields increases monitoring program costs per acre-foot of transferable water and increase the potential that a greater percentage of the field will be subject to seepage losses. Should there be a minimum size allowed for a crop idling transfer to minimize the percentage of the idled acreage subject to seepage problems? A study could be done to determine what a reasonable size would be with respect to effective water savings.
- Is loss of soil moisture a concern in the Sacramento Valley? There is currently no standard regarding how to maintain the soil surface. Studies of soil moisture loss have been done in recent years for specific areas, including limited locations in the Delta and Sacramento Valley. Expanded studies should be conducted to evaluate evapotranspiration and bare soil evaporation in areas of the Sacramento Valley representative of the locations typically transferring water.
- Are there air quality concerns related to idle fields due to increased dust emissions? Is there air quality concerns related to discing fields in the spring or early summer idled for water transfers and leaving them disced throughout the transfer period? Does this differ from typical practice for acreage idled as part of a

grower's normal practice? An effort should be made to compile air quality requirements for each county.

- Would there be a benefit to developing a water balance for districts who intend to participate in future water transfers? The initial focus would be on the major districts from past water transfers. A water balance may help in verifying what is happening within the district. Developing an accurate water balance may be difficult and costly due to a lack of measurement and recording devices on district distribution systems.
- Should weed control measures be required on idled rice lands? Should there be a requirement that all fields need to be disked and weed free? Is there a measurable effect on subsequent consumptive use for fall flood-up or rice cultivation in the following year?
- Should fields intended for rice production in the spring but planted to a winter crop be considered eligible for transfer? Does a winter crop deplete the soil's moisture and effect groundwater levels to a greater degree than leaving the field idle throughout the summer? If yes, is it a significant concern?
- Is depletion of soil moisture by vegetation on idle fields a concern (similar issue to overwinter crop) or is the primary concern access to groundwater in areas with localized high groundwater conditions?
- Dry vegetation may provide some habitat benefits. DWR Environmental Scientists, California Department of Fish and Game staff and U.S. Fish and Wildlife Service staff may be able to provide additional information on potential habitat benefits.